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Pediatric Consultation Liaison: Characteristics and Considerations for Training in Evidence-Based Practices

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Pediatric Consultation Liaison: Characteristics and Considerations for Training in Evidence-Based Practices

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Abstract

Pediatric Consultation Liaison: Characteristics and Considerations for Training in Evidence-Based Practices

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Consultation-liaison services are an integral part of many pediatric hospital settings, yet characteristics of this patient population have not been extensively documented. The current study is a retrospective one-year chart review of the consultation-liaison service at a local pediatric hospital, Dell Children's Medical Center (DCMC). The purpose of this study is trifold: (1) to characterize the CL population at Dell Children's Medical Center (DCMC); (2) to examine the relationship between time-to-initial consult (TTIC) and hospitalization length to test the hypothesis that delayed TTIC lengthens overall stay; and (3) to identify preliminary evidence-based practices that should be considered for CL provider training. Knowledge about evidence-based practice elements that overlap with the characteristics of consultation-liaison patient populations may inform trainings for consultation-liaison staff. This would help to ensure that youth seen in hospital consultation-liaison services are getting the best available services, which

is even more critical with the shortened time frame available to work with this patient population.

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Introduction

Youth with chronic medical illnesses are at an increased risk for emotional or behavioral problems (Pinquart & Shen, 2011) with more than 20% of youth with chronic medical conditions also having an emotional or behavioral disorder (Knapp & Harris, 1998; Eiser, 1990; Gortmaker, Walker, Weitzman, & Sobol, 1990; Lavigne & Faier-Routman, 1992). Roughly 10% of pediatric hospitalizations in the United States are due to a mental health diagnosis (Bardach et al., 2014). Youth with comorbid psychiatric and medical issues typically have more complex diagnoses, higher health care costs, and more complicated health outcomes than youth who do not have psychiatric and medical comorbidity (Steiner, Fritz, Mrazek, Gonzales, & Jensen, 1993). Research shows that youth who are referred to inpatient CL services tend to have significantly more behavior difficulties than their non-referred peers (Carter et al., 2003). These difficulties can negatively impact medical outcomes, as well as the patient and their family's coping and adjustment with medical issues (Carter et al., 2003).

In 1972, Stocking, Rothney, Grosser, and Goodwin estimated the prevalence of psychological issues in youth hospital patients and found that 63.75% of medically hospitalized children either had difficulties adapting to their medical issues or had a psychological disorder. The majority of these youth were not recognized by medical staff as needing any psychological services. This emphasizes the importance of the psychiatric presence in the pediatric hospital setting. Consultation-Liaison (CL) programs developed to address comorbidity between psychosocial and medical issues, and to provide psychological services within the hospital setting (Steiner et al., 1993). According to a

10-year clinical review by Knapp and Harris (1998), pediatric CL services are "increasingly playing a role in meeting the emotional and behavioral needs of pediatric inpatients via facilitation of individual and family adaptation to the stressors associated with chronic illness." In a survey administered by the American Academy of Child and Adolescent Psychiatry, 61% of 48 inpatient pediatric CL services in the United States reported that they have had an increase in referrals in the last five years (Shaw, Wamboldt, Bursch, & Stuber, 2006). While the need for pediatric CL services is clear, there is a lack of standardization between the different types of CL services (Carter, Kronenberger, Scott, & Ernst, 2009; Drotar, Spirito, & Stancin, 2003), thus little understanding about how to characterize this population and, therefore, how to best train providers to deliver effective, scientifically supported interventions.

Consultation-Liaison Psychiatry

CL psychiatry is the subspecialty of psychiatry that provides psychiatric or behavioral health care for medical patients in general hospital settings (Boland, Rundell, Epstein, & Gitlin, 2018; Bronheim et al., 1998; Lücke et al., 2017). Carter, Thompson, and Thompson (2014) describe the pediatric CL provider as a pediatric psychological hospitalist due to the variety of roles that a pediatric CL provider has: The CL provider not only plays an important role in the identification of psychosocial illnesses for the patient, but they also work to alleviate the negative effects that psychosocial symptoms can have on a patient's medical condition and associated factors such as patient and family coping, adjustment, adherence to treatment, behavior, and overall emotional well-being (Carter et al., 2014; Ernst et al., 2014). The primary goal of CL psychiatry is to

improve the overall quality of patient care by considering the psychosocial aspects of patient presentation, given that psychiatric disorders may impact the treatment and outcome for any medical illness (Lipowski, 1992).

What are known as the Five C's of Consultation-Liaison can help to further define the role of the CL provider (Carter et al., 2009; Carter et al., 2014). The Five C's of CL include: Crisis, Coping, Compliance, Communication, and Collaboration. *Crisis* is used to describe an event that, if not addressed, could increase future adjustment difficulties (Koocher, Curtiss, Pollin, & Patton, 2001). These events could include anything that influences a family's ability to cope or make decisions, such as the diagnosis of a new illness, self-injurious behavior, any changes in medical condition, or traumatic injury (Carter et al., 2014; Drotar & Zagorski, 2001). *Coping* describes that the CL provider may help patients and their families cope with any of the plethora of circumstances that can be stressful while in the hospital, including diagnosis, prognosis, treatment, or even hospitalization itself (Carter et al., 2014). *Compliance* involves the CL provider helping to ensure that the family understands the treatment regimens and lifestyle changes that may be required as a result of a medical condition to improve their adherence. The CL provider may also assist when treatment noncompliance is an issue. *Communication* is used to describe the level of sensitivity that the CL provider models in the hospital setting with everyone involved to facilitate communication between medical staff and patients and their families. *Collaboration* is used to describe the collaborative effort between the CL provider and medical staff on the goals of consultations.

Special Considerations in Pediatric Consultation-Liaison Services

Despite overarching similarities in the structure of adult and pediatric CL programs, some unique aspects of pediatric populations need to be considered (Fritz, 1990). For example, pediatrics has an increased focus on family systems approaches (Fritz, 1990). Adult family members bring youths in for treatment and are overall responsible for care management. As previously mentioned, the family must also be considered during care, as medical issues can create psychosocial issues within a youth's family unit (Cheshire, Barlow, & Powell, 2010; Eiser, 1990; Wallander & Varni, 1998).

Pediatric CL services differ from adult CL services in how issues present themselves and the methods with which they are solved (Fritz, 1990). Pediatric CL services typically involve interviews of multiple informants, including the youth patient, their family members, and affiliated medical staff (Carter et al., 2003). Specific medical issues that a pediatric CL provider encounters may be different than issues that adult CL providers encounter (i.e., chronic diseases in children, such as cancer, as opposed to common adult disorders, such as Alzheimer's disease; Fritz, 1990).

Furthermore, it is especially critical to consider development with youth patients, given that youth are often undergoing rapid physical changes, influencing how they recover from medical and psychiatric issues (Fritz, 1990; Ortiz, 1997). A child's age and development impact their ability to understand medical procedures and cope with the stress associated with being in the hospital (Ortiz, 1997). For example, the developmental level of the child may make hospital admissions processes traumatic as youth may be separated from their family while coping with difficult and frightening medical procedures, life-threatening experiences, and uncertain health outcomes (Ortiz, 1997).

Models of Consultation-Liaison

Three primary characteristics can be used to describe how a pediatric CL service operates within a medical environment: (1) emphasis on consulting versus liaising; (2) patient-centered (or family-centered) versus systems-centered; and (3) integrated versus parallel services (Carter et al., 2009). More descriptively: (1) Consultations typically begin with a request from a medical team member for consultation for a specific patient due to possible psychological influence in their medical care (Berlin & Wise, 1986) and involve visiting the patient and providing diagnoses and treatment recommendations (Lipowski, 1974). In contrast, the liaison provider is more involved in daily hospital services and may be involved in operational changes within the hospital unit (Carter et al., 2009; Strain, 2002). (2) In patient-oriented consultations, the CL provider assesses the patient's needs for treatment, provides treatment, and shares recommendations to the medical provider that referred the patient (Carter et al., 2009). Systems-centered models strive to educate medical team members to be more effective in their current and future cases (Alpert & Spencer, 1986; Carter et al., 2009). (3) Integrated and parallel services can be used to describe the differences in relationships that CL staff have with psychiatry and pediatric specialties within a given hospital (Carter et al., 2009). Parallel services describe when CL and behavioral health providers have appointments in various departments, whereas integrated services describe when CL providers are integrated or combined with clinical pediatric activities (Carter et al., 2009).

CL teams vary in several ways, including team composition, scope of member responsibilities, and how roles are conceptualized (Ernst et al., 2014; Wand, Wood,

Macfarlane, & Hunt, 2016). In practice, combinations of the aforementioned liaison and consultation frameworks can be used. Inpatient pediatric CL services in particular are typically an integrated service at the hospital that provides patient- and family-centered services (Piazza-Waggoner, Roddenberry, Yeomans-Maldonado, Noll, & Ernst, 2013).

Prior Pediatric Consultation-Liaison Service Patient Characterization Studies

Few existing studies outline characteristics of inpatient pediatric CL services, specifically in terms of reason for referral to CL (referral concern), referring service, mental health diagnosis, hospital visit reason, hospitalization length, and length of time between hospital admission and initial CL consult. With regard to referral concern, depression was amongst the top three referral reasons for four of seven existing studies (Brosig & Zahrt, 2006; Carter et al., 2003; Olson et al., 1988; Piazza-Waggoner et al., 2013). One of the studies included specific child psychiatric symptoms as a broader category, which would include depression; this category appeared in their top three referral reasons as well (Tunick, Gavin, DeMaso, & Meyer, 2013). Another study included concerns about the role of psychological factors in somatic symptoms (Drotar, 1977), which may overlap with psychiatric symptoms more broadly. Adjustment disorders, adjustment, or coping appeared amongst the top three referral concerns for six out of seven studies (Brosig & Zahrt, 2006; Carter et al., 2003; Drotar, 1977; Olson et al.,1988; Piazza-Waggoner et al., 2013; Tunick et al., 2013). Only one of the seven studies did not include either child psychiatric symptoms/depression and coping/adapting as a top referral reason (Rodrigue et al., 1995). The top three referral reasons in this study were cognitive/neuropsychological evaluation, externalizing behavior problems, and

comprehensive psychological evaluation. While behavioral problems did present in one of the other six studies (Olson et al., 1988), the evaluation-related concerns were not in the top three referral concerns for any other study. However, it is possible that evaluations were implied within the specific concerns provided in the other studies. Other top referral reasons not mentioned above included intellectual development (Drotar, 1977), medication/treatment noncompliance (Carter et al., 2003), emotional reactions to traumatic injuries (Brosig & Zahrt, 2006), parent and family support (Tunick et al., 2013), and pain (Piazza-Waggoner et al., 2013).

Five of these seven studies included information about which hospital services referred patients to CL (Brosig & Zahrt, 2006; Carter et al., 2003; Olson et al., 1988; Piazza-Waggoner et al., 2013; Rodrigue et al., 1995). General pediatrics was one of the top three referring services for each of these studies and was combined with adolescent medicine in one study (Piazza-Waggoner et al., 2013). Surgery appeared in some form (surgery, surgery transplantation, surgery/trauma) for four of the five studies (Brosig & Zahrt, 2006; Carter et al., 2003; Olson et al.,1988; Piazza-Waggoner et al., 2013). While trauma and surgery services were combined in one study (Carter et al., 2003), trauma was one of the top referring services in another (Brosig & Zahrt, 2006). Neurology appeared as one of the top referring services in two studies (Piazza-Waggoner et al., 2013; Rodrigue et al., 1995). Other top referring services only found in one study included hematology/oncology, gastroenterology, and adolescent medicine (Carter et al., 2003; Olsen et al., 1988; Piazza-Waggoner et al., 2013).

Several key variables for characterizing a CL population were underrepresented in these seven studies. Patient mental health diagnoses, hospital visit reason, hospitalization length, and time to initial CL consult were not reported consistently. The lack of information about these variables is a limitation in prior pediatric CL studies. While referral concerns inform why the patient was referred, mental health diagnoses provide information about CL provider's perspective on the patient's mental health functioning and act as a guide for interventions and treatment recommendations. It is not possible to inform trainings for CL staff if there is no information about the types of mental health diagnoses that are present in CL populations. Furthermore, information about why patients were admitted to the hospital inform what medical issues are present in the CL population, which is a key component of CL patient characteristics that needs to be considered when working with this population. It is also useful to know how long patients are typically in the hospital before being seen by CL as this might relate to other factors, such as overall hospitalization length. More information about these variables within CL populations is necessary to more fully characterize CL populations.

It is important to note that these few existing CL characterization studies take place in diverse medical care settings and divisions of hospital populations. Olson et al. (1988) excluded referrals from specific services at the hospital. Rodrigue et al. (1995) included outpatient referrals in their analyses, and Tunick and colleagues' (2013) study was specifically for critical care referrals. Brosig and Zahrt (2006) explained that other services would have received referrals for specific target problems at their hospital. Thus, care environment (i.e., hospital specialty, CL service model) may influence the

characterization results. As Rodrigue et al. (1995) described, the different structures and organizations of hospitals make it difficult to infer results for other settings. More pediatric CL populations need to be characterized, across a breadth of service settings, to better generalize the results of these studies.

State of Evidence-based Practices in Consultation-Liaison Services

Despite strong research support for the benefits of evidence-based mental health interventions, these interventions generally tend to be underused in typical service settings (Addis, Wade, & Hatgis, 1999; Bearman & Weisz, 2015; Riemer, Rosof-Williams, & Bickman, 2005). A common critique of evidence-based practices is the mismatch between the single-disorder focus of most treatments that have been tested in randomized controlled trials and the complex and comorbid caseloads seen in most real-world settings (Bearman & Weisz, 2015). These complex and comorbid clients would require the clinician to utilize several different evidence-based treatment manuals, and it is likely not feasible for clinicians to be trained in every available evidence-based treatment. Furthermore, it can be difficult for a clinician to select an evidence-based intervention for any given disorder because there are several interventions available that involve similar strategies (Kazdin, Bass, Ayers, & Rodgers, 1990). For example, exposure is a therapeutic technique that is common across multiple branded evidence-based anxiety treatments, such as both Coping Cat and Cool Kids (Kendall & Hedtke, 2006; Rapee et al., 2006).

The extent to which evidence-based practices are used in pediatric CL settings is not well known (Piazza-Waggoner et al., 2013; Ruddy & House, 2005). There has been

growing momentum in the field of CL services to develop standards and competencies in evidence-based practices in training and clinical practice to ensure that patients are receiving evidence-based services (De Giorgio et al., 2015; Sudak & Goldberg, 2012; Roberts, Brown, & Puddy, 2002). While CL psychiatry strives to be evidence-based, several barriers have made it difficult for the field, such as the reliance on research from controlled outpatient studies and time constraints that present themselves in the hospital setting, discussed next.

Use of evidence-based practices in CL services can be particularly challenging because the population of patients seen through these services differ from the typical population seeking outpatient services; these patients typically have somatic symptoms related to a medical issue with comorbid psychiatric symptoms that become apparent while they are being seen for medical reasons (Lücke et al., 2017). For example, CL psychiatry relies on the use of interventions that have been studied in outpatient populations. While it is true that these interventions can be adapted and applied for use in inpatient settings, little research has been done with this population (Dinwiddie, 2013; Ernst et al., 2014). With so little research on inpatient populations, it is difficult to interpret the literature and determine what the most applicable intervention strategies are for this population. Dinwiddie (2013) described that information for treating this population is not always available with the current outpatient-focused literature, such as how a surgical procedure may impact a patient's mental health. Not only has research primarily been done in outpatient settings, but the research on interventions typically stems from controlled studies with stringent inclusion and exclusion criteria that results in

a sample that is not generalizable to the broad outpatient population, much less inpatient hospital populations (Ali, Ernst, Pacheco, & Fricchione, 2006).

Furthermore, clinical staff working in hospital CL services have a limited duration of time and visits with their patients, and the process for deciding what treatment to engage in is often unclear. CL providers typically have to complete assessments and interviews with multiple family members and medical staff, observe patients, and discuss cases with doctors in addition to the implementation of intervention, all within potentially stressful time and monetary constraints (including insurance and billing issues) while the patient is in the hospital with other medical needs (Drotar, 1995). Especially in a fast-paced medical setting, it is not feasible for CL staff to attempt to implement a full treatment protocol, which may contribute to the underutilization of evidence-based practices in the CL setting.

Due to the difficulty practitioners face when determining which evidence-based treatment manual to use, some researchers have advocated for the use of a practice element approach to evidence-based practice where clinicians are trained in specific techniques that are shared among various evidence-based interventions instead of relying on one of several available treatment manuals (Chorpita, Becker, Daleiden, & Hamilton, 2007; Chorpita, Daleiden, & Weisz, 2005). A *practice element* is a therapeutic technique or approach that is a distinct component within a larger intervention (Chorpita et al., 2005). This definition of practice elements relies on the assumptions that practice elements can be defined, their presence in an intervention can be coded reliably, and that various treatments may share common practice elements (Chorpita et al., 2005).

A process known as *distillation and matching* helps to summarize the commonalities in techniques used across evidence-based interventions to facilitate treatment selection (Chorpita et al., 2005; Chorpita et al., 2007; Chorpita & Daleiden, 2009). Distillation involves labeling practice elements that are used in evidence-based interventions to summarize the commonalities and differences across the treatment literature (Becker, Boustani, Gellatly, & Chorpita, 2018; Chorpita et al., 2005). This process is beneficial in that it makes the practices that are common across evidence-based interventions more apparent, helping to guide treatment selection (Chorpita et al., 2005). Distillation allows for the practice elements to be communicated in a common language, thus revealing the shared clinical techniques that are used in these evidence-based interventions. For example, exposure is a common clinical technique used to decrease anxiety symptoms and rewards are commonly used to increase motivation. The matching aspect of the distillation and matching process allows for characteristics of a given population to be considered when selecting an intervention (Chorpita et al., 2005). For example, gender and race can be incorporated into the model to see which interventions would be the most appropriate for a given population.

Because insufficient information exists about pediatric CL patients in terms of their characteristics and the treatment that they receive, it is difficult to know which evidence-based practices might work well for this population (Dinwiddie, 2013). Knowledge about the evidence-based practice elements that are applicable for a CL service may make it possible to apply a distillation analysis to learn which practice elements would best support the pediatric CL population, which may make it easier for

staff to recognize what is helpful for pediatric clients that present for a CL consult visit. Therefore, the characterization of a given CL population is the first step to inform trainings for CL staff and could be leveraged to specifically train for evidence-based practice elements.

The Current Study

The purpose of this study is trifold: (1) to characterize the CL population at Dell Children's Medical Center (DCMC); (2) to examine the relationship between time-to-initial consult (TTIC) and hospitalization length to test the hypothesis that delayed TTIC lengthens overall stay; and (3) to identify preliminary evidence-based practices that should be considered for CL provider training.

Characterize the Consultation-Liaison population at Dell Children's Medical Center. Few existing studies outline characteristics of inpatient pediatric CL services. The variables referral concern and referring service are consistently represented in previous studies. However, variables such as mental health diagnosis, hospital visit reason, hospitalization length, and TTIC have previously been underrepresented in pediatric CL characterization studies. Both the consistently represented and underrepresented variables were included in the current study to provide a more complete characterization of the pediatric CL population and add to the existing knowledge about pediatric CL patient characteristics.

Relationship between time-to-initial consult and hospitalization length. Information about length of hospitalization and TTIC is limited in the existing literature and was collected to test the hypothesis that delayed TTIC lengthens overall hospital

stays. It is possible that an earlier consult visit may correspond with overall better treatment outcomes and, thus, a shortened hospital visit. If there is a delay in a necessary consult visit, it is possible that the overall length of hospitalization is impacted. Primary mental health diagnosis and hospital visit reasons will be examined as potential confounding variables as it is likely that different presenting problems may influence the overall length of hospitalization.

Identify preliminary evidence-based practices. Information about primary diagnoses given by CL staff will allow for the initial identification of potential appropriate evidence-based practice elements. Knowledge about evidence-based practice elements that target the characteristics of consultation-liaison patient populations may inform trainings for consultation-liaison staff. This would help to ensure that youth seen in hospital consultation-liaison services are getting the best available services, which is even more critical given the shortened time frame available to work with this patient population.

Method

Service Context

Consultation-Liaison service description. Dell Children's Medical Center of Central Texas (DCMC) is a freestanding pediatric hospital located in Austin, Texas that uses a family-centered approach and has a consulting emphasis. The Texas Child Study Center (TCSC) provides treatment for youth with emotional, developmental, and behavioral difficulties as well as CL services for DCMC. TCSC psychologists, psychiatrists, and psychiatry trainees provide CL services for DCMC patients who are having difficulty related to their medical hospitalization. The CL team focuses on factors that are affected by medical issues and is a special service available to all patients at DCMC.

Consultation-Liaison service process. Throughout the duration of this chart review, DCMC's CL service operated as a parallel service in that was a separate, non-integrated department in the hospital. CL staff at DCMC conduct their own independent rounds each morning and triage daily tasks. Occasionally, CL providers attend rounds with medical providers for patients of concern. CL staff also receive consults from medical team members, typically with a specific question about a patient. Medical providers at the hospital send a HIPAA-compliant text message to the CL group with a specific question or concern about a patient. When a referral is received by the CL staff, they may communicate with the referring provider to obtain any additional information about the patient, such as discharge date or clarification on the referral concern. Prior to meeting the patient, CL staff review the patient's chart and history, communicate with the

patient's nursing team, and meet with the patient and/or their family members to address the medical provider's specific concern. Although visits with patients and their families typically only involve the CL provider, it is common for the CL provider to collaborate with other providers in the hospital to better inform patient care. After the consult, the CL provider communicates with the medical provider or team that made the referral, either in-person, via telephone, or via text. The CL provider reviews the findings from the consult, discusses and clarifies any misconceptions, and provides recommendations to the medical team for both treatment and interactions with the patient and their family.

Procedures

Data was obtained through a retrospective chart review of all youth who were referred for an initial consult visit by DCMC's CL service from October 8, 2016 through October 7, 2017. Data had already been collected as a part of medical records for CL services at DCMC. DCMC staff with access to the data removed potentially identifying variables from the spreadsheet containing this data (names, medical record numbers, date of birth, date of admission, date of discharge, date of consult visit, and referring individual). DCMC staff shared the anonymous data with the study principal investigator through the cloud-based and secure file sharing platform, UT Box. Data of interest included age, gender, race, ethnicity, referral concern, referring service (from within the hospital), mental health diagnosis, hospital visit reason, length of hospitalization, and length of time between hospital admission and initial consult (time-to-initial-consult, TTIC). Data variables that were entered as open text in patient charts and were coded for analyses include referral concern, mental health diagnosis, and hospital visit reason.

These variables were double-coded by two undergraduate research assistants using a coding manual described below. The principal investigator of this study resolved any discrepancies between the two raters. Additional information on this process and reliability are outlined below.

Coding Manual

A coding manual was created that outlined the category options for each variable. Mental health diagnoses were coded based on categories specified in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM–5*; American Psychiatric Association, 2013). A coding system used in a chart review by Tunick, Gavin, DeMaso, and Meyer (2013) was adapted to code the referral concern and hospital visit reason variables. The variables and their categories are described in more detail below.

Referral concerns. The referral concerns variable captures the reason that the medical provider or team referred a patient to CL. The majority of the referral concern categories used by Tunick et al. (2013) in their chart review were used in the current study. However, the categories "general parent/family support" and "sibling support" were combined due to overlap in content. The categories of "recommendations for outpatient referral" and "provide discharge recommendations" were also added to accommodate patterns in DCMC's CL staff notes that did not fit into existing categories. The categories coded for this variable include: Coping/adaptation/traumatic stress; psychiatric symptomatology; changes in mental status; non-accidental injuries (overdose/suicide attempts, child abuse, etc.); capacity assessment; adherence concerns; parent psychopathology; general parent/family support/sibling support;

recommendations for outpatient referral; family-staff conflict; anticipatory bereavement/end-of-life; other assessment; and provider discharge recommendations. If relevant, coders also indicated whether the referral concern was to help rule out or to help evaluate a history of one of the aforementioned categories.

Mental health diagnoses. The diagnoses categories in this study represent broad categories outlined in the *DSM-5* (American Psychiatric Association, 2013). Categories included: Neurodevelopmental disorders; schizophrenia spectrum and other psychotic disorders; bipolar and related disorders; depressive disorders; anxiety disorders; obsessive compulsive and related disorders; trauma- and stressor-related disorders; dissociative disorders; somatic symptom and related disorders; feeding and eating disorders; elimination disorders; sleep-wake disorders; sexual dysfunction; gender dysphoria; disruptive, impulse-control, and conduct disorders; substance-related and addictive disorders; neurocognitive disorders; personality disorders; paraphilic disorders; other mental disorders; medication-induced movement disorders and other adverse effects of medication; other conditions that may be a focus of clinical attention (which will be referred to as other conditions); and deferred. If relevant, coders also indicated whether the diagnosis indicated was one that the CL provider indicated as a diagnosis to be ruled out, if the diagnosis was a historical diagnosis, or if the diagnosis indicated was for the patient's parent.

Hospital visit reason. The hospital visit reason variable represented the various reasons for which youth were admitted into the hospital. The categories used by Tunick et al. (2013) for the variable "reasons for pediatric intensive care (PICU) admission" were

used and included: Chronic condition-related acute illness; neurological; acute medical illness; traumatic injury; oncology; overdose/suicide attempt; congenital cardiac disease; acquired cardiac disease; and general surgical. If relevant, coders also indicated whether the reason for the hospital visit was due to the rule out or history of a condition.

Coding Training

Prior to a reliability check (described below) and coding, all coders met with the principal investigator to discuss the meaning of each variable and its categories. Initial coding training took about three hours in total, with follow-up conversations occurring as necessary throughout the coding process. During training, the team went over examples for each category. If there were any questions about the variables or their categories, the principal investigator discussed them with experts in the field. This was done in two phases where diagnoses were coded first, and the variables hospital visit reason and referral concern were coded second.

Coding Reliability

Interclass correlation (ICC) estimates were calculated using SPSS Statistics (version 25). According to Cicchetti and Sparrow (1981), ICCs less than .4 indicate poor reliability, .40-.59 indicate fair reliability, .60-.74 indicate good reliability, and values .75 or higher indicate excellent reliability. Prior to each coding segment, a random sample of 20 patient charts were selected for which each of the two coders had to meet adequate reliability on the primary category codes for those variables with an expert rater (ICC>.60). Across the pair of coders, their reliability estimates were ICC (2,2) = .968 and ICC (2,2) = .976 for referral concern; ICC (2,2) = 1 for both raters for mental health

diagnosis, and ICC (2,2) = .879 and ICC (2,2) = .899 for hospital visit reason. The correlations associated with these reliability estimates are reported in Table 1.

Once sufficient reliability was obtained, the two coders coded data from the remaining patient charts. All data was double coded, meaning that both coders coded all 302 patient charts for each variable, allowing for the assessment of agreement between independent coders for the full dataset. Overall reliability estimates were ICC (2,2) = .970 for referral concern, ICC (2,2) = .942 for mental health diagnosis, and ICC (2,2) = .823 for hospital visit reason. When coding for the variables was complete, the principal investigator compared the ratings provided by each coder and resolved any discrepancies, consulting an expert in the field as needed.

Data Analysis Plan

All analyses in the current study were calculated using SPSS Statistics (version 25). Descriptive analyses were conducted to characterize the CL population's demographic characteristics (age, gender, race, ethnicity), referral concern, referring service, mental health diagnosis, hospital visit reason, length of hospitalization, and TTIC.

Linear regression was used to answer the question: How does the overall length of hospital stay vary with length of time between hospital admission and initial consult visit (time-to-initial consult, TTIC), accounting for mental health diagnosis and hospital visit reason? To investigate this relationship, a simple linear regression analysis was first conducted to look at the relationship between length of hospital stay and TTIC without the potential confounding variables. Next, a multiple linear regression analysis was

conducted for each of the additional predictor variables separately. A Bonferroni correction was applied to reduce the chances of Type 1 error; the adjusted p-value was .025. Due to limitations in SPSS, general linear model univariate analyses were used to run the multiple regression analyses. This allowed for the use of both continuous (TTIC and length of hospitalization) and categorical variables (mental health diagnosis and hospital visit reason) in the model. Dummy coded variables for both categorical predicators (mental health diagnosis and hospital visit reason) were automatically created by SPSS. For both variables, the category with the most frequent occurrences was used as the reference group.

The top three mental health diagnoses given by CL providers were cross listed with those in Chorpita and Daleiden's (2009) study to identify the common practice elements for those disorders, providing preliminary common practice elements to be considered for CL training.

Results

Characteristics of this Consultation-Liaison Population

Demographic characteristics. The sample consisted of 302 youth who were referred for a consult visit by CL services during the specified twelve months of data collection. Of these patients, 63% were females, 61.3% Non-Hispanic/Non-Latino, and the mean age was 13.4 years old. See Table 2 for a more complete description of patient demographic characteristics.

Referral concerns. The top three primary referral concerns were psychiatric symptomatology (N=149; 49.3%); coping/adaptation/traumatic stress (N=121; 40.1%); and adherence concerns (N=7; 2.3%). Three of the 302 patient charts were missing referral concerns. Of the remaining 299 patients, 7 (2.3%) referral concerns were related to the history of a mental health issue and one (.3%) was related to ruling out a mental health concern. Figure 1 illustrates the frequency of all primary referral concerns.

80 of the 302 patients (26.5%) had secondary referral concerns. The top three secondary referral concerns were related to coping/adaptation/traumatic stress (N= 40; 50%); psychiatric symptomatology (N= 21; 26.3%); and the provision of recommendations for outpatient referral (N= 7; 8.8%). Of these, one (1.3%) referral concern was related to ruling out a mental health concern and three (3.8%) were related to the history of a mental health issue.

Only 13 (4.3%) had a tertiary referral concern. Of these, six (46.2%) had a referral concern related to coping/adaptation/traumatic stress; four (30.8%) had a referral concern related to psychiatric symptomatology; and two (15.4%) had a referral concern related to

the provision of recommendations for outpatient referral. Two (15.4%) of these tertiary referral concerns were related to a historical mental health issue. Only one patient (.3%) had a fourth referral concern and it was related to coping/adaptation/traumatic stress.

Referring service. The majority of referrals came from the Pediatric Consultation and Referral Service, which will be referred to as general pediatrics (N=178; 58.9%). The next highest referring service was Physical Medicine & Rehabilitation (PM&R; N=13; 4.3%) followed by surgery (N=9; 3%) and the Pediatric Intensive Care Unit (PICU; N=9; 3%). No other referring service provided 3% or more of the total patient referrals. 18.9% (N=57) of all 302 patient charts did not include information about which service made a patient referral to CL. Figure 2 illustrates the referral frequency for each service.

Mental health diagnoses. A total of 284 patients (94%) were given primary mental health diagnoses. The three most common primary mental health diagnoses given by CL staff included trauma- and stressor-related disorders (N=93; 30.8%), anxiety disorders (N=77; 22.5%), and depressive disorders (N=34; 11.3%). These three primary diagnostic categories made up 64.6% of the full sample. A total of 6 (2%) of the 302 patients had diagnoses that were deferred at initial consult and a total of 11 (3.6%) of patients were not given a diagnosis during their consult visit. One (.8%) diagnosis indicated concern about parental mental health diagnosis of anxiety and thus was not included in the total amount of cases with a primary diagnosis of an anxiety disorder. Of the 284 patient primary diagnoses, 11 (3.6%) of them were specified as diagnoses that needed to be ruled out and 6 (2%) were given based on a history of the diagnosis. Figure 3 depicts the frequencies for all primary diagnoses.

Only 120 of the 302 patients (39.7%) were provided with a secondary mental health diagnosis. Of these 120, the three most common secondary diagnoses provided were anxiety disorders (N=35; 29.2%), depressive disorders (N=20; 16.7%), and trauma- and stressor-related disorders (N=20; 16.7%). Of the 121 patients who were given a secondary mental health diagnosis, 31 (25.8%) of them were specified as a diagnosis that needed to be ruled out and 11 (9.2%) of them were given based on a history of the diagnosis.

52 patients (17.2%) were also given a tertiary mental health diagnosis. Of these, the most common tertiary diagnoses given were anxiety disorders (N=18; 34.6%), neurodevelopmental disorders (N=9; 17.3%), depressive disorders (N=7; 13.5%), and trauma- and stressor-related disorders (N=7; 13.5%). Of the 52 patients who were given a tertiary mental health diagnosis, 13 (25%) of them were specified as a diagnosis that needed to be ruled out and 3 (5.8%) of them were given based on a history of the diagnosis. A total of 20 (6.6%) patients received four mental health diagnoses, seven (2.3%) patients received five, three (1%) received six, two (.7%) received seven, and only one (.3%) received eight.

Hospital visit reason. More than half of the hospital visit reasons were related to an acute medical illness (N=163; 54%). The second most common hospital visit reason was neurological related (N=59, 19.5%), followed by chronic condition-related acute illness (N=35, 11.6%). Two (.7%) of the 302 patient visit reasons were related to the rule out of a condition. Figure 4 depicts all primary hospital visit reasons for the current study.

Only 113 of the 302 (37.4%) patients had a secondary hospital visit reason. The most common secondary hospital visit reason was related to an acute medical illness (N=70; 61.9%), followed by traumatic injury (N=15, 13.3%), and neurological (N=10; 8.8%). Two (1.8%) of these secondary visit reasons were related to ruling out a condition and one (.9%) was related to the history of a condition. Only 31 (10.3%) of patients had a tertiary hospital visit reason and five (1.7%) had a fourth hospital visit reason.

Hospitalization Length and Time-to-initial Consult

The average length of hospitalization was 10.20 days (Minimum= .4 days; Maximum= 186 days; *SD* = 20.22). The average TTIC was 3.57 days (Minimum= 0 days, or same day consult; Maximum= 87 days; *SD* = 6.84).

Results of the simple linear regression indicated that there was a statistically significant effect between TTIC and length of hospitalization ($F(300, 1) = 369.50$, $p < .001$, $R^2 = .55$), which was a large effect ($\eta^2_p = .55$; Cohen, Cohen, West, & Aiken, 2003). It was estimated that 55.2% of the variance in length of hospitalization is explained by TTIC. The point estimate for the relationship between TTIC and length of hospitalization was 2.20 ($t = 19.22$, $p < .001$). In other words, for every additional day between hospital admission and consult visit (TTIC), the length of hospital visit was expected to increase by 2.20 days.

When mental health diagnosis was added into the model, the point estimate for the relationship between TTIC and hospital visit length was 2.08 ($t = 20.40$, $p < .001$), which was a large effect ($\eta^2_p = .60$; Cohen et al., 2003). For each additional day between hospital admission and consult visit (TTIC), controlling for mental health diagnosis, the

length of hospital visit was expected to increase by 2.08 days. Two parameters were statistically significant: (1) the diagnosis category of deferred in reference to trauma- and stressor-related disorders with a point estimate of 42.73 (t = 8.71, $p < .001$), which was a medium to large effect ($\eta^2_p = .22$; Cohen et al., 2003) and (2) the diagnosis category of other conditions in reference to trauma- and stressor-related disorders with a point estimate of 26.27 (t = 4.91, $p < .001$), which was a small to medium effect ($\eta^2_p = .08$; Cohen et al., 2003). The trauma- and stressor-related disorders category was used as the reference group as it was the most common hospital visit reason.

When hospital visit reason was added into the model, the point estimate for the relationship between TTIC and hospital visit length was 2.13 (t = 17.79, $p < .001$), which was a large effect ($\eta^2_p = .52$; Cohen et al., 2003). With the adjusted p-value of .025, no parameters were statistically significant. The only parameter that would have been statistically significant without the use of a Bonferroni correction was the hospital visit reason category traumatic injury in reference to acute medical illness with a point estimate of 5.35 (t = 2, $p = .05$), which would have been a small effect ($\eta^2_p = .01$; Cohen et al., 2003). Acute medical illness was used as the reference group as it was the most common hospital visit reason.

Preliminary Evidence-based Practices to be Considered for Consultation-Liaison Provider Training

Chorpita and Daleiden's (2009) distillation model revealed a total of nine separate common practices that occur with high frequency in the treatment evidence base that correspond to the top three primary diagnosis categories. For anxiety disorders, the

individual practice elements of exposure, relaxation, cognitive restructuring, modeling, and psychoeducation provided to the child were shown to be the most common practices, occurring in 27-80% of "winning" treatments. Traumatic stress was similar to anxiety in the most common practices, with the individual practice elements of exposure, relaxation, cognitive restructuring, modeling, and psychoeducation to the child again being the most common practices, occurring in 27-91% of "winning" treatments, but there was more of an emphasis on cognitive restructuring and psychoeducation provided to the child than was the case for anxiety disorders. For depressed mood, cognitive restructuring, psychoeducation provided to the child, maintenance/relapse prevention, activity scheduling, problem solving, and self-monitoring were the most common practice elements, occurring in 54-75% of "winning" treatments. The overlap between these nine unique practice elements reveal potential key training targets. Table 3 outlines the frequencies of these common practice elements as reported in Chorpita and Daleiden (2009).

Discussion

The current study sought to characterize the CL population at DCMC, examine the relationship between time-to-initial consult (TTIC) and hospitalization length to test the hypothesis that delayed TTIC lengthens overall stay, and to identify preliminary evidence-based practices that should be considered essential targets for CL provider training. There have only been a handful of studies on the characterization of pediatric CL service populations. The current retrospective chart review contributes to and extends this scarce literature by not only providing a characterization of a specific CL population and information about referring services and referral concerns, but also describing variables that have been less consistently reported, such as mental health diagnoses, hospitalization length, and TTIC. Furthermore, to the author's knowledge, this is the first pediatric CL study to suggest specific evidence-based practice elements as key training targets based on population characteristics.

Characteristics of this Consultation-Liaison Population

Demographic characteristics. Previous studies that characterized pediatric CL populations inconsistently reported demographic information. The average age of patients seen through CL services in the current study was 13.4 years old compared to 9.7 to 12.3 years old in previous studies (Carter et al., 2003; Olson et al., 1988; Piazza-Waggoner et al., 2013; Rodrigue et al., 1995; Tunick et al., 2013). In the current study, patients were 63% female compared to 38% to 59% of patients in previous studies (Carter et al., 2003; Olson et al., 1988; Piazza-Waggoner et al., 2013; Rodrigue et al., 1995; Tunick et al., 2013). The current study was 76.5% White while previous studies have ranged from 68.4

to 78% White (Carter et al., 2003; Piazza-Waggoner et al., 2013; Rodrigue et al., 1995; Tunick et al., 2013). Overall, the average age and gender makeup of CL services has been inconsistent. However, the race of populations examined thus far is primarily White. This information is helpful when considering the generalizability of the current study and emphasizes the importance of future studies continuing to characterize CL populations.

Referral concerns. In the current study, psychiatric symptomatology was the top referral concern category. This corresponds to previous pediatric characterization studies that found that psychiatric symptoms and depression were amongst the top referral concerns (Brosig & Zahrt, 2006; Carter et al., 2003; Olson et al.,1988; Piazza-Waggoner et al., 2013; Tunick et al., 2013). The second top referral concern of coping/adaptation/ traumatic stress corresponds to the six out of seven studies that had adjustment concerns and coping as one of the top referral concerns (Brosig & Zahrt, 2006; Carter et al., 2003; Drotar, 1977, Olson et al.,1988; Piazza-Waggoner et al., 2013; Tunick et al., 2013). Only one of the seven prior studies did not include either child psychiatric symptoms/depression and coping/adapting as a top referral concern (Rodrigue et al., 1995). These top two referral concerns map onto the diagnostic categories. Adherence-related concerns was the third-highest referral concern category in this chart review, which maps on to treatment compliance, and is similar to one prior chart review that had medication/treatment noncompliance as one of their top referral concerns (Carter et al., 2003) and another that included treatment compliance as a part of their overall category of psychological adaptation concerns (Drotar, 1977). These results highlight the similarities in referral concerns in the existing pediatric CL studies, suggesting that the

primary types of concerns that cause medical teams or providers to make referrals to CL services are similar across pediatric CL settings.

Referring service. The current study's top referring services were similar to that of other pediatric characterization studies. General pediatrics was one of the top referring services in all five studies that reported this information and was the top referring service in the current study by an order of magnitude. In this study, general pediatric referrals total more than referrals by all other listed services combined (see Figure 2). It is possible that more patients at the hospital are seen through general pediatrics than other departments, and thus more referrals are received through this service. Surgery had occurred as one of the top referring services in four out of five prior studies and was one of the top three referring services in the current study. Of note, 18.9% of patient charts did not include which service made a patient referral to CL. This reveals inconsistency in CL providers' reporting of this information in their initial consult notes and is a limitation in the current work that will be expanded upon later.

Mental health diagnoses. While depression, coping, and adjustment concerns were amongst the top referral concerns in previous pediatric CL studies, only one of the previously published studies reported mental health diagnosis information (Carter et al., 2003). The top diagnoses reported by Carter et al. (2003) were adjustment disorders, psychological factors affecting physical condition, major depression, and depressive disorder not otherwise specified. Although the diagnoses by Carter et al. (2003) were based on the previous edition of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000) and

the current study used the *DSM-5*, overlaps between diagnoses are notable (American Psychiatric Association, 2013). The current study considered adjustment disorders to fall under the broader *DSM-5* diagnostic category of trauma- and stressor-related disorders (American Psychiatric Association, 2013). Both chart reviews also revealed depressive disorders as one of the primary diagnoses. This suggests some commonality in top diagnoses in pediatric CL patients, which would provide support for pediatric CL services emphasizing depression- and trauma-related evidence-based practice elements in their trainings. However, more research needs to be done given the lack of information about this patient characteristic in other pediatric CL services.

Hospital visit reason. Hospital visit reasons were reported in one prior study (Tunick et al., 2013), and the same categories were used in the current study. Tunick et al. (2013) characterized a pediatric CL service in a pediatric intensive care unit (PICU) and found the primary reasons for admittance were related to congenital cardiac disease, chronic condition-related acute illness, and acute medical illness. In the current study, the primary hospital visit reasons were related to acute medical illnesses, neurological reasons, and chronic condition-related acute illness. One possible reason for the difference in hospital visit reason may be that the current study reviewed general pediatric CL services, while Tunick and colleagues' (2013) reviewed PICU services where reasons for admissions (need for intensive care) could be more severe than general pediatric hospital visit reasons. However, two of the top three visit reason categories for each study are the same. While this might be because of the broad nature of the visit reasons that fall under the categories chronic condition-related acute illness and acute

medical illness, it also reveals potential commonalities in the types of patients seen across different pediatric CL services.

Hospitalization length and time-to-initial consult

The hypothesis that delayed TTIC lengthens overall hospital stay appears to be correct in that there was a statistically significant relationship between these two continuous variables. While there were two statistically significant parameters within the overarching mental health diagnosis category (deferred mental health diagnosis and other conditions), the addition of these variables did not appear to change the point estimate for the relationship between these variables without the covariates. It is possible that those with mental health diagnoses that were deferred or categorized as other conditions may have more complicated medical trajectories, delaying both initial consults and hospital discharges.

Overall, for each additional day between hospital admission and initial consult, the length of a patient's hospital visit is expected to increase by about two days, regardless of primary mental health diagnosis or hospital visit reason (with the exception of patients who had a deferred mental health diagnosis or diagnosis of other conditions). The results indicate that the more delayed an initial consult visit, the longer a hospitalization and that more than half of the differences between patient hospitalization lengths can be explained by TTIC. This suggests medical providers should refer patients to CL services earlier within their hospital stay. However, some caution in interpretation is warranted. While this relationship did not seem to be impacted by the majority of mental health diagnoses or hospital visit reasons, it is possible that there are other factors

that may have influenced this relationship. For example, if medical providers tend to give referrals to CL closer to discharge, then it would appear as though a delay in initial consult visit results in a longer hospital stay when that might not be true. In this case, the delayed initial consult could be explained by various reasons. For example, the delay in initial consult could be intentional due to more pressing (urgent physiological) medical needs or it is possible that medical providers are more likely to refer to CL services if patient symptoms are not improving or stabilizing. Future research should investigate this relationship further to identify potential confounding factors.

Preliminary Discussion of Common Elements Appropriate for this Consultation-Liaison Population

As previously stated, the top three primary diagnoses encompass the primary concerns for 64.6% of this CL population. The top three primary and secondary mental health diagnoses given by CL staff were trauma- and stressor-related disorders, anxiety disorders, and depressive disorders. The top three tertiary mental health diagnoses included two out of these top three diagnoses (anxiety disorders and depressive disorders). This suggests the unique nine practice elements identified as occurring most frequently in evidence-based treatments with proven benefit by Chorpita and Daleiden (2009) would be appropriate ingredients for the treatment of more than just the 64.6% who received the three most common primary diagnoses.

The distillation approach could also address referral concerns. The top two referral concerns were psychiatric symptomatology and coping/adaptation/traumatic stress, which overlap with mental health diagnoses and should be considered when

determining evidence-based practice element training targets. The third most common referral concern was adherence which is related to treatment compliance, a key aspect of disruptive behavior disorders that could also be a training target. However, adherence concerns only made up about two percent of primary referral concerns in the current study and, thus, may not be a primary training target.

While there has been a push toward CL services developing standards in evidence-based practices in their training and practice (De Giorgio et al., 2015; Roberts et al., 2002; Sudak & Goldberg, 2012), the extent to which evidence-based practices are actually used is not well known (Piazza-Waggoner et al., 2013; Ruddy & House, 2005). Pediatric CL staff are limited in terms of both the number and length of visits that they have with patients and, thus, do not have the time to implement full evidence-based protocols. Furthermore, it is not feasible for CL staff to be trained in multiple complete evidence-based protocols given the fast-paced nature of the hospital setting. Identification of key practice elements that can help the majority of CL patients allows for CL providers to be trained in common evidence-based practice elements that will allow providers to best serve their patient population under the various constraints that are present in the hospital setting. A matching analysis that considers the demographic characteristics of the CL population is needed to more accurately reveal what practice elements CL providers should be trained in (Chorpita et al., 2005). The current study is the first step in this process and provides the information necessary to run these analyses for this population.

Limitations

This study improves upon prior research in that it considers additional variables that have previously been underrepresented in pediatric characterization studies, in addition to providing more information on variables that have been consistently reported across the few existing pediatric CL characterization studies. Despite these additions, some limitations should be noted.

Data from the current retrospective chart review was collected over a one-year period and, by nature, increasing the length of data collection could influence results. The current data is also cross-sectional in nature. Variables investigated are potentially related and it is impossible to determine what impact various factors may have on one another or how CL influences overall outcomes. Furthermore, the current study also did not document which CL provider wrote patient notes. It is possible that there are biases in the ways that different providers document initial consult visits and provide mental health diagnoses.

Another limitation of the study is that open text data was coded by two undergraduate research assistants unfamiliar with CL prior to coder training. Interrater reliability was calculated based on reliability between these raters and the principal investigator of the current study, who is still in graduate training. However, every variable that was coded was double-coded, coding categories were based on previous research and experts in the field's input, and experts in the field were consulted with for any coding concerns.

The referring services were not reported in almost 20% of patient charts, therefore services that currently appear to be underrepresented in this population might have

referred more patients than it appears. However, even if all missing referring sources were from a single underreported service at the hospital, general pediatrics would still be the primary referring service for this population.

As has been discussed, the service models and characteristics of each CL service are different, which increases the importance of continuing to investigate unique CL service populations to improve our understanding of different pediatric CL populations and services. While the CL population at DCMC may not generalizable to every CL population, the current study examined variables that have not consistently been reported in previous pediatric CL characterization studies, adding robustness to literature on pediatric CL patients.

The current study did not report information on interventions or number of consults as its primary purpose was to characterize the population based on information reported at initial consult. Information about referral concerns and diagnoses is critical for case conceptualization and planning for patient care. Therefore, it is this information that would be the most informative in terms of learning which evidence-based practice elements would be needed to be able to help patients in subsequent visits. However, information about what actually and typically happens within the consults would also be useful for developing an understanding of how much current practice reflects the evidence base and should be a focus of future research.

Future Directions

Information about CL recommendations for patient care both during and post the hospital stay should also be considered to expand on what is being done within existing

CL services. Furthermore, it would be helpful to compare the characteristics of the CL population with those of the larger hospital to determine whether there are differences in those referred and not-referred to CL services.

As noted above, future studies should consider comparing what is being done in CL with what the evidence finds as most effective, expanding on the preliminary analysis in this study. The impact on treatment outcomes of evidence-based practices that may already be present in usual CL practice can be compared to the impact of non-evidence based practice elements (Garland et al., 2014). It would also be helpful to test the utility of practice elements training on these nine unique practice elements to confirm the proportion of the pediatric CL population that is covered by them. Furthermore, patient demographic characteristics, mental health diagnoses, and referral concerns should be used to apply a full matching analysis for this population (Chorpita et al., 2005).

Conclusion

The current study contributes to the limited literature on the characterization of pediatric CL populations, reveals a relationship between TTIC and hospitalization length, and provides nine preliminary evidence-based practice elements that should be CL provider training targets.

To the author's knowledge, the current study encompasses the largest set of patient characteristics within the literature. The current study reveals commonalities with the few existing pediatric CL characterization studies, including similar referral concerns (psychiatric symptomatology, adjustment, and coping), referring services (general pediatrics and surgery), top primary diagnoses (trauma- and stressor-related and

depression), and hospital visit reasons (acute medical illness, neurological, and chronic-related acute illness).

The current research suggests that delayed initial consult visits may result in longer hospitalization lengths, which suggests that medical providers should refer to CL services earlier during patient hospital stays. However, this relationship needs to be explored further for other possible confounding factors.

The common diagnoses between the current study and (Carter et al., 2003) support an emphasis on trauma- and depression-related evidence-based practice elements in pediatric CL provider trainings. Nine unique practice elements were identified with proven benefit for the top three primary diagnoses in the current study (trauma- and stressor-related, anxiety, and depression) using Chorpita and Daleiden's (2009) distillation and matching model. These nine evidence-based practice elements are likely to benefit more than those given these diagnoses as their primary mental health diagnosis, given the common presence of these same three diagnoses across non-primary mental health diagnoses in the current study. Training in full evidence-based interventions for these three primary mental health diagnoses alone would be both costly and time intensive. Training in these nine discrete common practice elements would allow for CL providers to have a small toolbox of skills to address the primary presenting problems for the majority of CL patients in this population. The identification of these preliminary common evidence-based practice elements should provide key training targets for pediatric CL services and, in turn, may help to increase the use of evidence-based practices in pediatric CL populations. While this study provided preliminary information about these key training targets, a full

matching analysis should be done to more accurately depict the set of evidence-based practice elements that pediatric CL providers would most benefit from being trained in.

Appendix

Table 1

Intercorrelations Between Raters for all Coded Variables

Coded Variable	Coder 1	Coder 2	Principal Investigator
Diagnosis			
Coder 1	—	1	1
Coder 2		—	1
Principal Investigator			—
Visit Reason			
Coder 1	—	.97	.81
Coder 2		—	.83
Principal Investigator			—
Referral Concern			
Coder 1	—	.99	.97
Coder 2		—	.96
Principal Investigator			—

Table 2

Patient Demographic Characteristics

Characteristics	Patients (N = 302)
	Mean (SD)
Age	13.4 (3.9)
	N (%)
Gender	
Female	191 (63%)
Male	111 (37%)
Race	
White	231 (76.5%)
Black/African American	29 (9.6%)
Asian	2 (.7%)
Other race	36 (11.9%)
Declined to specifiy	1 (.3%)
Not indicated	2 (.7%)
Ethnicity	
Non-Hispanic/Non-Latino	185 (61.3%)
Hispanic/Latino	107 (35.4%)
Not indicated	4 (1.3%)

Table 3

Most Common Practice Elements for Anxiety, Depression, and Trauma Disorders

Code	N (%)		
	Anxiety (N=84)	Traumatic Stress (N=11)	Depressed Mood (N=24)
Exposure	67 (80%)	10 (91%)	1 (4%)
Relaxation	35 (42%)	7 (64%)	10 (42%)
Cognitive restructuring	32 (38%)	10 (91%)	18 (75%)
Modeling	28 (33%)	3 (27%)	6 (25%)
Psychoeducation to the child	23 (27%)	9 (82%)	17 (71%)
Maintenance/relapse prevention	11 (13%)	5 (45%)	16 (67%)
Activity scheduling	1 (1%)	-	14 (58%)
Problem solving	14 (17%)	3 (27%)	13 (54%)
Self-monitoring	20 (24%)	2 (18%)	13 (54%)

Note. Frequency information was obtained from Chorpita and Daleiden (2009). Results reprinted with permission from Dr. Bruce Chorpita and Dr. Eric Daleiden.

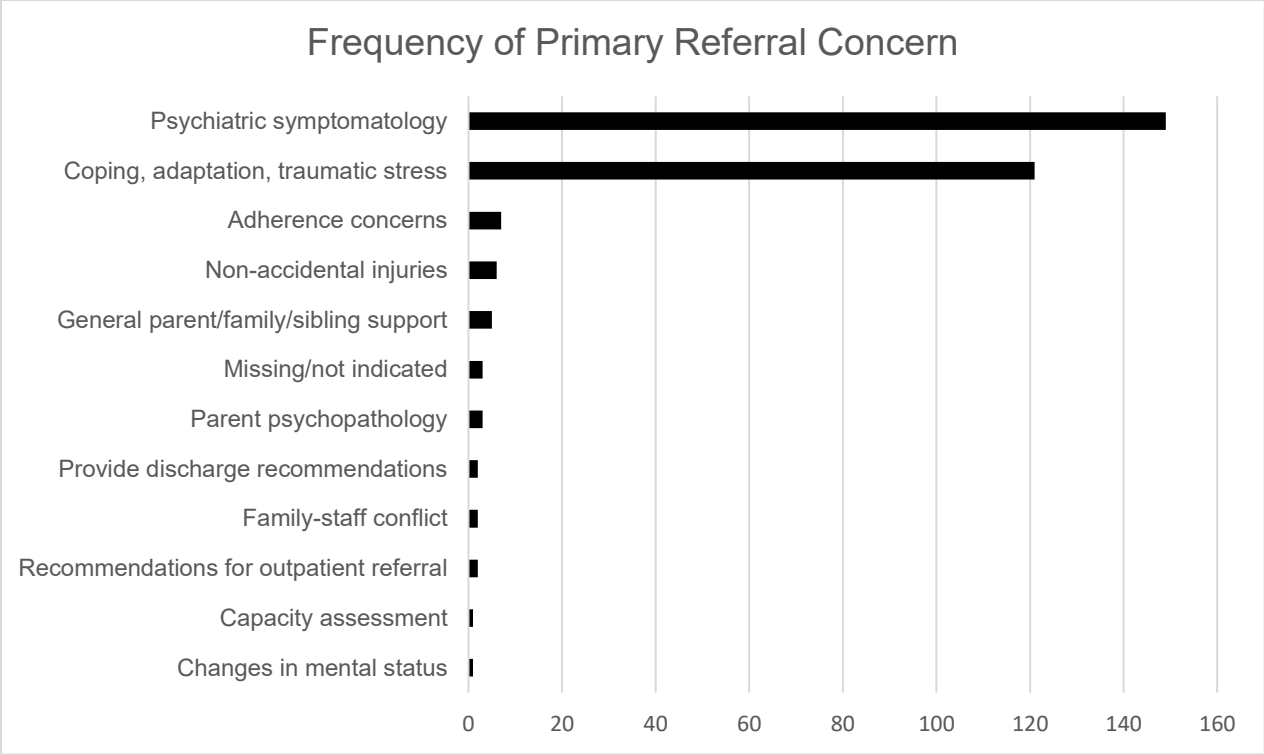

Figure 1. Frequencies of primary referral concerns.

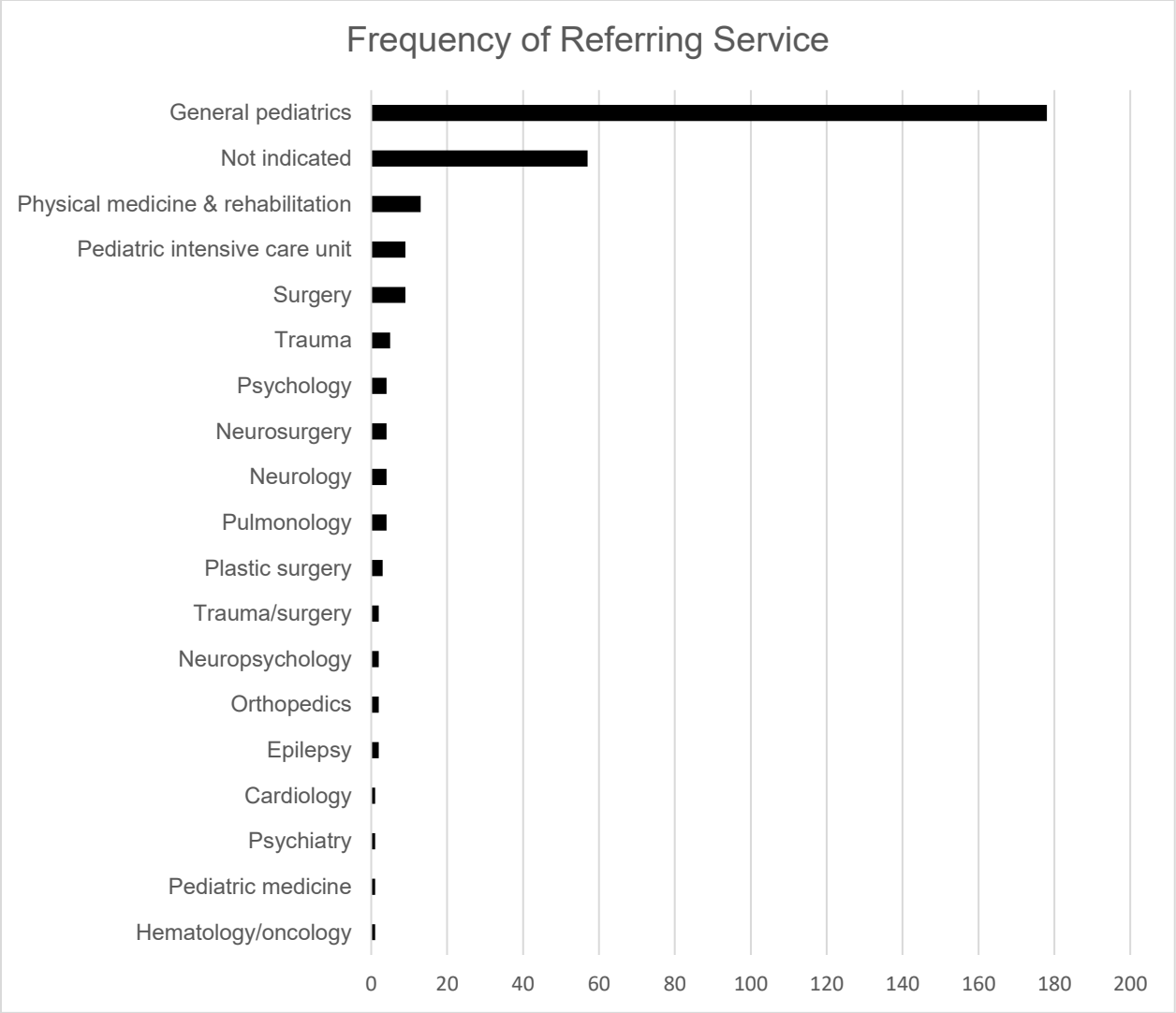

Figure 2. Frequencies of services' referrals for CL consults.

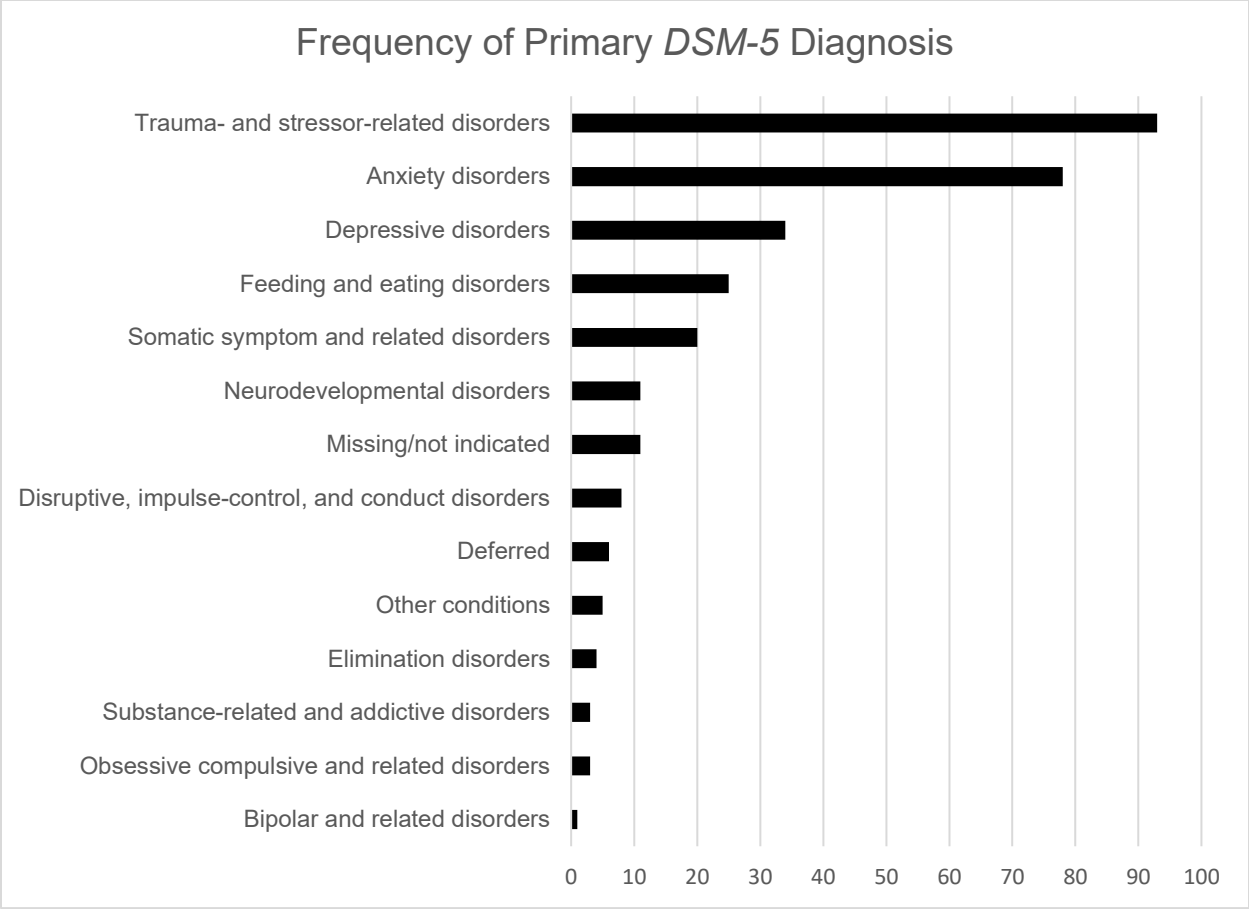

Figure 3. Frequencies of primary *DSM-5* diagnoses given to patients by CL providers post initial consult visit (American Psychiatric Association, 2013).

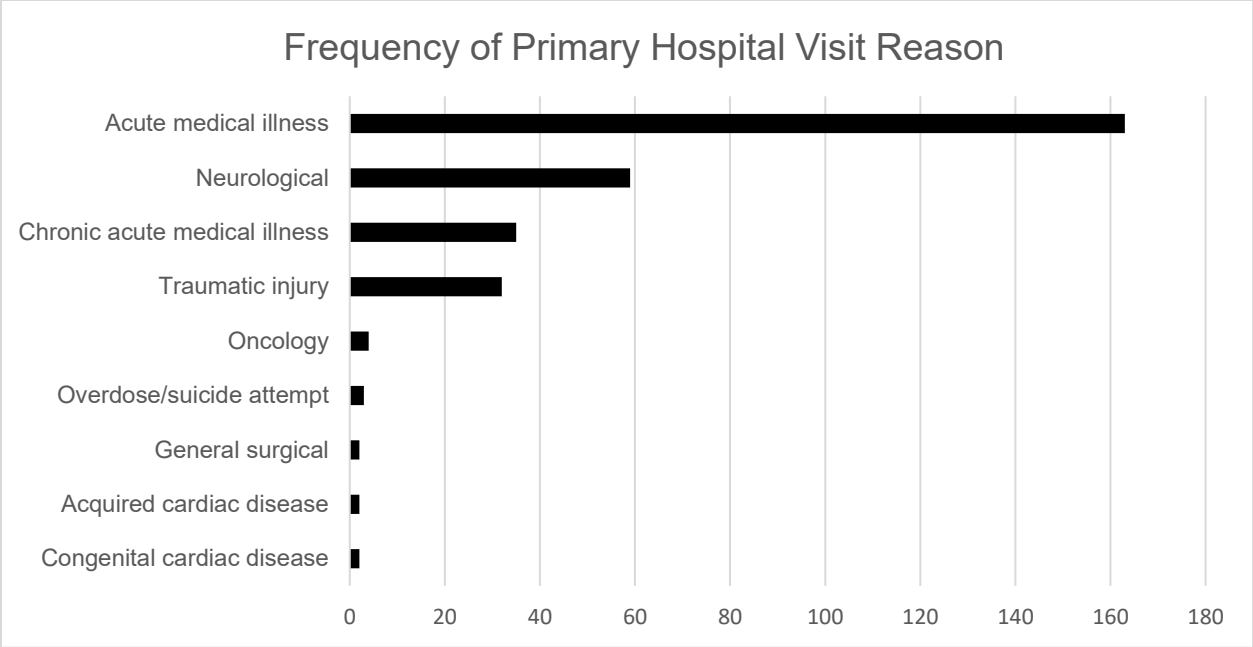

Figure 4. Frequencies of primary hospital visit reasons.

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